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**1**

 Newton's second law of motion can be formally stated as follows: The acceleration of an object as produced by a net force is directly proportional to the magnitude of the net force, in the same direction as the net force, and inversely proportional to the mass of the object.

 Therefore, on entering the field, there is a vertical downward force acting on the electron. This is because electric force acts in the opposite direction ads the electrice field and the electric field is directed upwards.

 The magnitude of the force is given by E=eq, where e is the electric field strength and q is the charge on the electron. No force acts horizontally. Hence, the magnitude of the electron is gotten using Newton's 2nd law.

**F = ma**

where **m = mass**

 **F = force**

 **a = acceleration**

a = F/m = eq/m

The direction of 'a' is downward just like the way force F is directed because according to newton's 2n law, force is directly proportional to accelation.

**2A**

ELECTRIC FIELD IN RESPECT TO CHARGES

 An electric field is a space surrounding a charged particle where the particle exerts electric force.

When charged particles are close enough to exert force on each other, their electric fields interact. The electric field is an alteration of space caused by the presence of an electric charge. The electric field mediates the electric force between a source charge and a test charge.

The field is a vector; by definition, it points away from positive charges and toward negative charges as shown in figure below:



 **2B**

ELECTRIC CURRENT IN RESPECT TO ELECTRICAL CHARGES

 Electric current is directly proportional to the voltage difference between the two terminals. We also are familiar with the fact that voltage difference between two points is also proportional to the electric field magnitude.

 This naturally implies that, electric current is proportional to the magnitude of electric field between the two points the current flows.

 An electric current results from the collective movement of free charges under the effect of an electric field. The free charges may be electrons in a metal (current in a conductor connected to a battery), ions in a salt solution (electrolysis), or ions in a gas (plasma discharge, lightning).

**2C**

MAGNETIC FIELD IN RESPECT TO ELECTRICAL CHARGES

The magnetic field is an exerted area around the magnetic force. It is obtained by moving electric charges. The direction of the magnetic field is indicated by lines. While the electric fields are generated around the particles which obtain electric charge. During this process, positive charges are drawn, while negative charges are repelled.